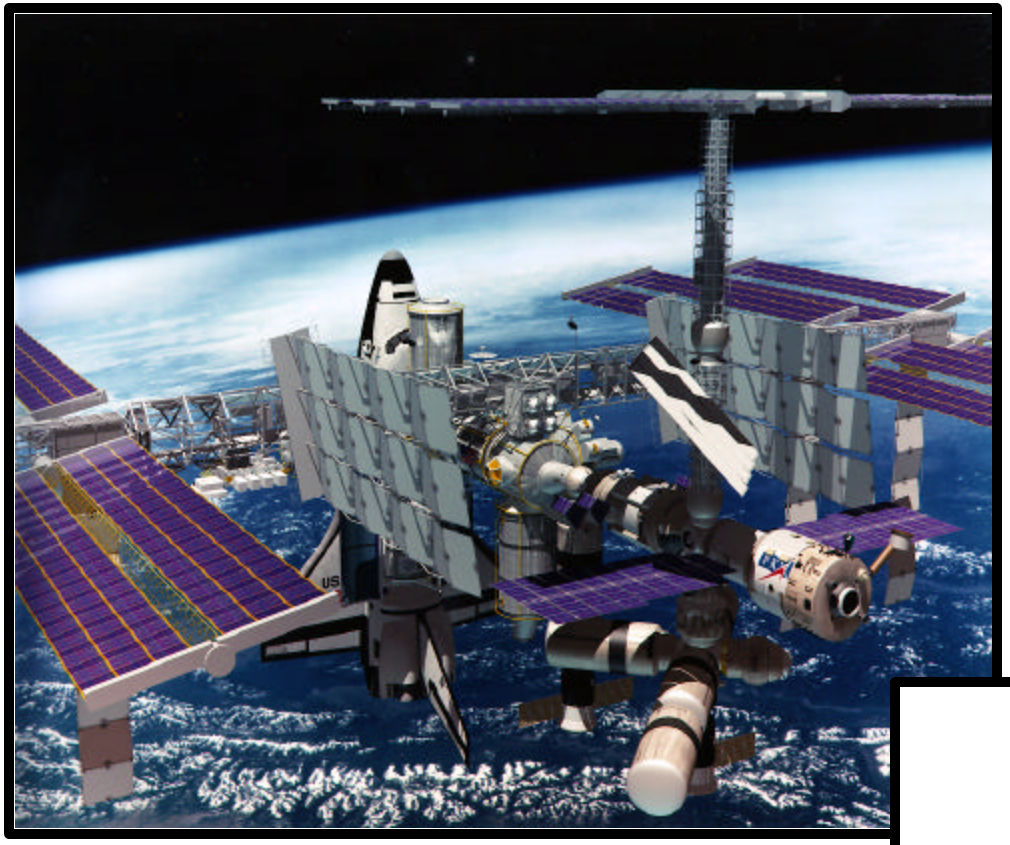


ISS Payload Integration Process Improvement

Lesa Roe
Space Station Payloads Office
December 17, 2002

Agenda

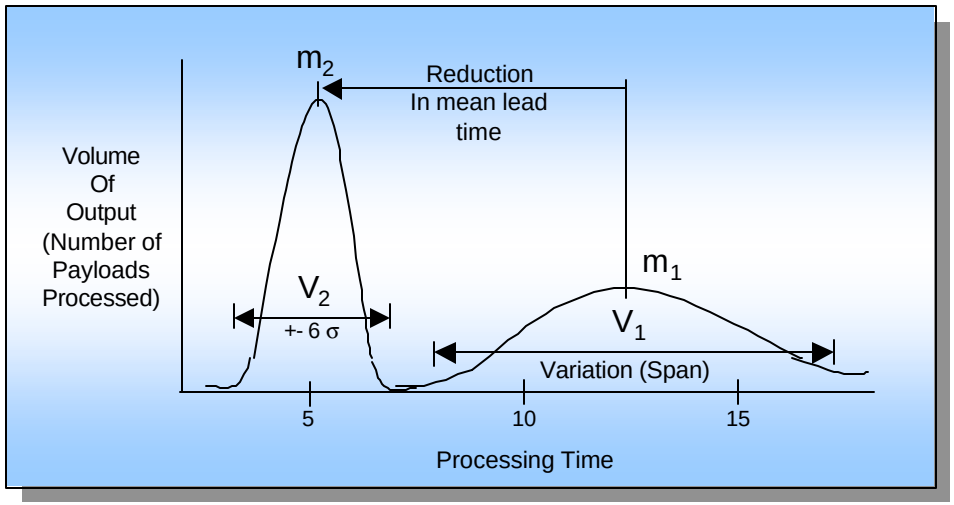
- Background
- Improvement Approach
- Approach Implementation
- Results
- Conclusion
- Backup

Background

- The Payload Community perceives that the NASA ISS Payload Integration Process needs improvement in several key areas
  - Overall cycle time and general process streamlining
  - Quantity of documentation required
  - Communication between the ISS Program and the Payload community
  - Quantity of resources needed to support the process
- As a result, the ISS Payloads Office chartered an effort to address these and other concerns
  - OZ asked Boeing, the ISS Payload Integration Contractor (IPIC), to direct an effort to address the issues
  - Boeing acquired the services of ARES Corporation to facilitate a Lean Six-Sigma process improvement technique to improve the payload integration process

Improvement Approach

- Lean Six Sigma is a dual approach utilized to reduce cycle time (Lean) and reduce process variation (Six Sigma) to increase process execution speed and quality and reduce costs



- Lean Six Sigma uses a “Breakthrough Strategy” to effect improvement
- This strategy is described on the next page

Improvement Approach

Define

- Identify what's important to the customer. Define project scope.

- Cost of Poor Quality (COPQ)
- Pareto Chart
- Product, Process Performance Metrics
- Process Flowchart (high level)
- Customer "Voices"
- Critical To (CT) Matrix

Measure

- Determine what to measure (Y) and validate the measurement system.
- Quantify current performance and estimate improvement target.

- Input-Process-Output (IPO) Diagram
- Process Mapping
- Check Sheets
- Pareto Diagram
- Measurement Systems Analysis (MSA)
- Process Capability Analysis

Analyze

- Identify causes (Xs) of variation and defects
- Provide statistical evidence that causes are real.
  Commit to improvement target for Y.

- Cause and Effect Diagram
- Cause and Effect Matrix
- Failure Mode & Effects Analysis (FMEA)
- Multi-Vari Charts
- Correlation and Regression
- Hypothesis Testing
- Design of Experiment (DOE) Screening

Improve

- Determine solutions (ways to counteract causes) including operating levels and tolerances.
- Install solutions and provide statistical evidence that the solutions work.

- Design of Experiment (DOE)
- Error Proofing
- Statistical Tolerancing
- Failure Mode & Effects Analysis (FMEA)
- Hypothesis Testing

Control

- Put controls in place to maintain improvement over time.
- Provide statistical evidence that the improvement is sustained
  (3 months of data)

- Control Plans
- Control Charts
- Visual Management
- Procedures / Work Instructions
- Process Capability
- Total Productive Maintenance

Source: Six Sigma Academy

Approach Implementation

- Three one-week sessions were held with key stakeholders in the payload integration process
  - ISS Program Office
  - MSFC Payload Operations
  - Payload Safety
  - Payload Engineering and Integration
  - KSC Ground Processing
  - Representative payload developers
  - Et al.

Approach Implementation

- The sessions were aligned in conjunction with the beginning of the IPIC
  - Session one was conducted September 23-27, 2002
  - IPIC contract began October 1, 2002
  - Session two was conducted October 28-November 1, 2002
  - Session three was conducted December 2-6, 2002
- The goal of the sessions was to identify areas where improvements to the process could be achieved and plan implementation of those improvements

Approach Implementation

- Session One
  - Introduced the Lean Six Sigma process
  - Defined the problem statement
  - Identified specific, key problems to solve
  - Identified key measures of effectiveness
  - Identified input data streams (e.g., verification data, safety data packages, etc.)
  - Identified twenty-four separate data vehicles (EIAs/PIAs, OPMS, PDL, etc.)
  - Identified thirty-three separate process outputs (e.g., Ops documentation, Integrated Complement Analysis, Station CoFR requirements, etc.)
  - Mapped the data streams to the data vehicles
  - Mapped the outputs to the owners
  - Defined Lessons learned from other similar programs (e.g., Spacehab, Spacelab, etc.)
  - Identified possible improvements for each key issue

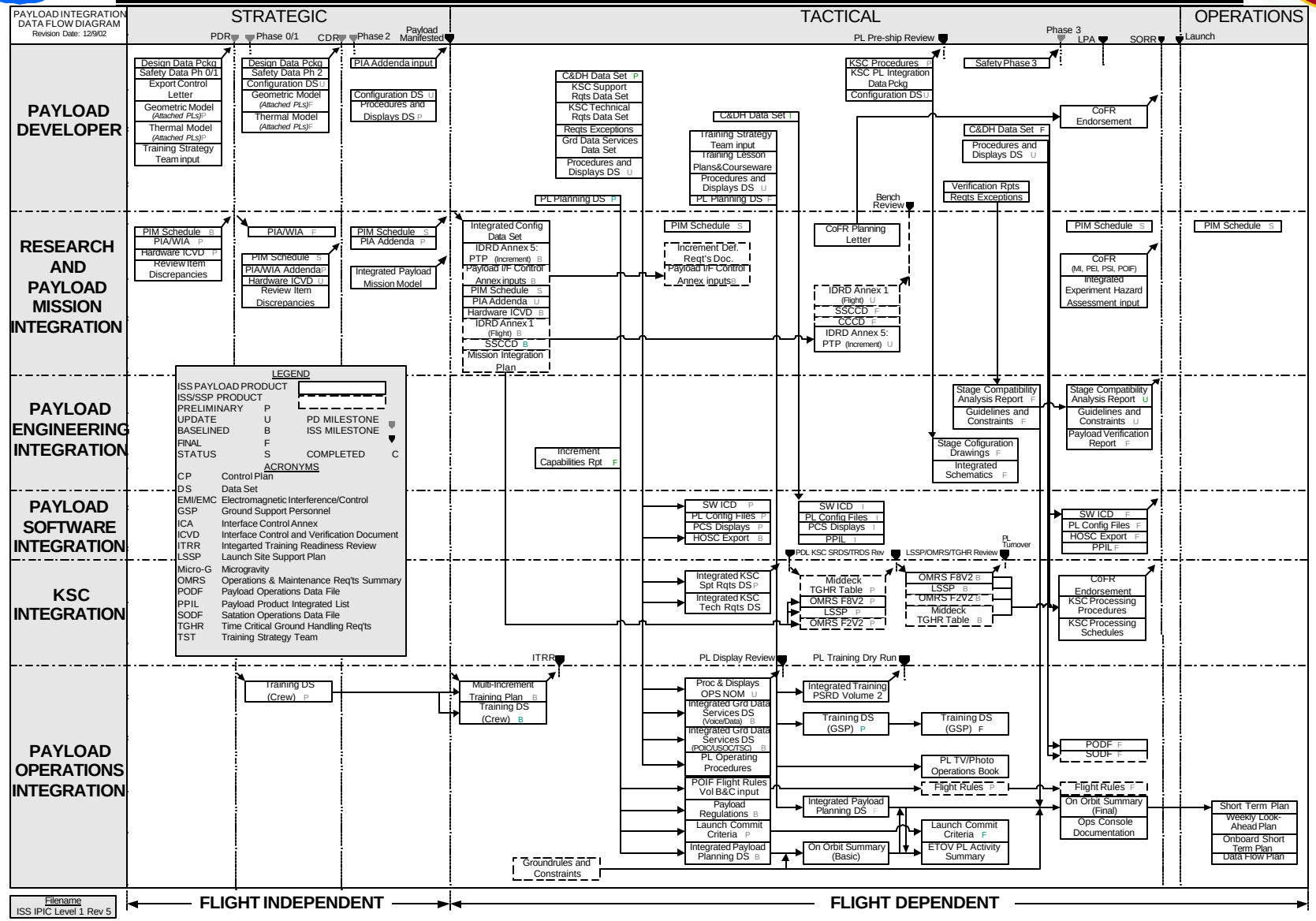
Approach Implementation

- Session Two
  - Developed an end-to-end level one process flow for payload integration
  - Identified and honed improvement options for key issues
  - Developed detailed level two process flows for processes on level one flows
- Session Three
  - Reviewed and evaluated level one, two and three process flows
  - Reviewed process improvement initiatives developed prior to session three
  - Identified and reviewed additional improvement initiatives
  - Developed improvement initiative action items
  - Developed improvement initiative implementation schedule

Results

- A PD-centric philosophy to improve the payload integration process was defined
- A revised, updated, multi-level payload integration process flow was developed (the top-level is shown on the next page)

Results


PAYLOAD INTEGRATION DATA FLOW DIAGRAM
Revision Date: 12/9/02
STRATEGIC
TACTICAL
OPERATIONS
PDR
Phase 0/1
CDR
Phase 2
Payload Manifested
PL Pre-ship Review
Phase 3
LPA
SORR
Launch
PAYLOAD DEVELOPER
RESEARCH AND PAYLOAD MISSION INTEGRATION
PAYLOAD ENGINEERING INTEGRATION
PAYLOAD SOFTWARE INTEGRATION
KSC INTEGRATION
PAYLOAD OPERATIONS INTEGRATION
Design Data Pckg
Safety Data Ph 0/1
Export Control Letter
Geometric Model (Attached PLS)P
Thermal Model (Attached PLS)P
Training Strategy Team input
Design Data Pckg
Safety Data Ph 2
Configuration DS U
Geometric Model (Attached PLS)F
Thermal Model (Attached PLS)F
PIA Addenda input
Configuration DS U
Procedures and Displays DS P
C&DH Data Set P
KSC Support Rqts Data Set
KSC Technical Rqts Data Set
Reqts Exceptions
Grd Data Services Data Set
Procedures and Displays DS U
C&DH Data Set I
Training Strategy Team input
Training Lesson Plans&Courseware
Procedures and Displays DS U
PL Planning DS P
KSC Procedures P
KSC PL Integration Data Pckg
Configuration DS U
Safety Phase 3
CoFR Endorsement
C&DH Data Set F
Procedures and Displays DS U
Verification Rpts
Reqts Exceptions
Bench Review
PIM Schedule B
PIA/WIA P
Hardware ICVD P
Review Item Discrepancies
PIA/WIA F
PIM Schedule S
PIA/WIA Addenda P
Hardware ICVD U
Review Item Discrepancies
PIM Schedule S
PIA Addenda P
Integrated Payload Mission Model
Integrated Config Data Set
IDRD Annex 5: PTP (Increment) B
Payload I/F Control Annex inputs B
PIM Schedule S
PIA Addenda U
Hardware ICVD B
IDRD Annex 1 (Flight) B
SSCCD B
Mission Integration Plan
PIM Schedule S
Increment Def. Reqt's Doc.
Payload I/F Control Annex inputsB
CoFR Planning Letter
IDRD Annex 1 (Flight) U
SSCCD F
CCCD F
IDRD Annex 5: PTP (Increment) U
PIM Schedule S
CoFR (MI, PEI, PSI, POIF)
Integrated Experiment Hazard Assessment input
PIM Schedule S
Stage Compatibility Analysis Report F
Guidelines and Constraints F
Stage Cofiguration Drawings F
Integrated Schematics F
Stage Compatibility Analysis Report U
Guidelines and Constraints U
Payload Verification Report F
Increment Capabilities Rpt F
SW ICD P
PL Config Files P
PCS Displays P
HOSC Export B
SW ICD I
PL Config Files I
PCS Displays I
PPIL I
SW ICD F
PL Config Files F
HOSC Export F
PPIL F
PDL KSC SRDS/TRDS Rev
LSSP/OMRS/TGHR Review
PL Turnover
Integrated KSC Spt Rqts DS P
Integrated KSC Tech Rqts DS
Middeck TGHR Table P
OMRS F8V2 P
LSSP P
OMRS F2V2 P
OMRS F8V2 B
LSSP B
OMRS F2V2 B
Middeck TGHR Table B
CoFR Endorsement
KSC Processing Procedures
KSC Processing Schedules
ITRR
PL Display Review
PL Training Dry Run
Training DS (Crew) P
Multi-Increment Training Plan B
Training DS (Crew) B
Proc & Displays OPS NOM U
Integrated Grd Data Services DS (VoiceData) B
Integrated Grd Data Services DS (POIC/USOC/TSC) B
PL Operating Procedures
POIF Flight Rules Vol B&C input
Payload Regulations B
Launch Commit Criteria P
Integrated Payload Planning DS B
Integrated Training PSRD Volume 2
Training DS (GSP) P
Integrated Payload Planning DS P
On Orbit Summary (Basic)
Training DS (GSP) F
PL TV/Photo Operations Book
Flight Rules P
Launch Commit Criteria F
ETOV PL Activity Summary
PODF F
SODF F
Flight Rules F
On Orbit Summary (Final)
Ops Console Documentation
Short Term Plan
Weekly Look-Ahead Plan
Onboard Short Term Plan
Data Flow Plan
Groundrules and Constraints
LEGEND
ISS PAYLOAD PRODUCT
ISS/SSP PRODUCT
PRELIMINARY P
UPDATE U
BASELINED B
FINAL F
STATUS S
PD MILESTONE
ISS MILESTONE
COMPLETED C
ACRONYMS
CP Control Plan
DS Data Set
EMI/EMC Electromagnetic Interference/Control
GSP Ground Support Personnel
ICA Interface Control Annex
ICVD Interface Control and Verification Document
ITRR Integarted Training Readiness Review
LSSP Launch Site Support Plan
Micro-G Microgravity
OMRS Operations & Maintenance Req'ts Summary
PODF Payload Operations Data File
PPIL Payload Product Integrated List
SODF Satation Operations Data File
TGHR Time Critical Ground Handling Req'ts
TST Training Strategy Team
Filename
ISS IPIC Level 1 Rev 5
FLIGHT INDEPENDENT
FLIGHT DEPENDENT

Results

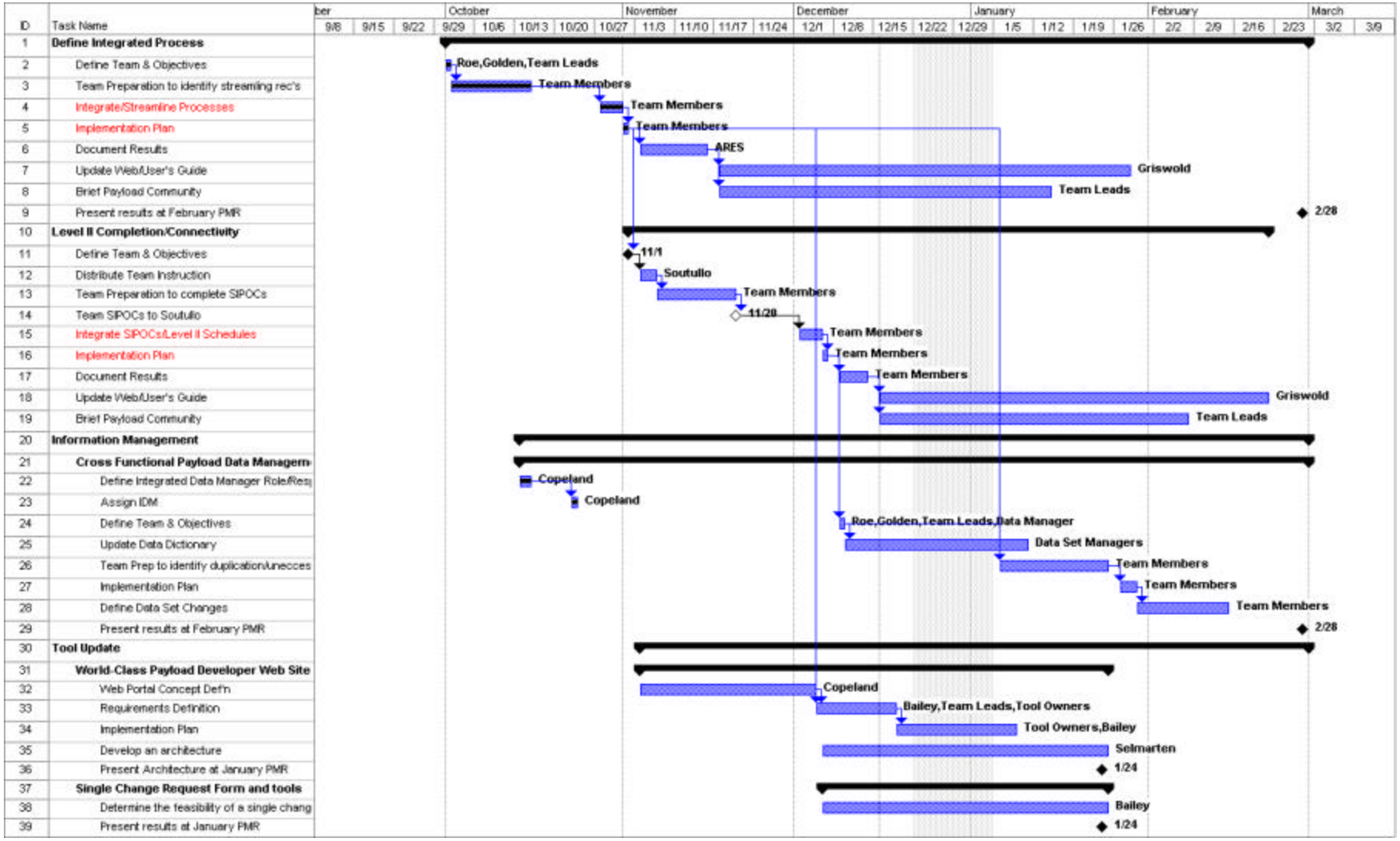
- Approximately 70 action items were developed to improve the payload integration process. Key actions included:
  - Develop options for how mission integration will be performed
    - » Incorporated in options will be ease of reflight and payload integration (vs increment integration)
    - » Incorporated in options will be simplified documentation (i.e. combined integration agreements)
  - The development of a cross-functional payload data management function chartered to identify duplicative data and recommend and implement changes
  - The development of a single, World-class Payload Developer website to ease access to payload integration processes, requirements, data,etc.
  - Determining the feasibility of a single change request form
  - Review end to end processes for labeling, ops nom, IMS and determine ways to simplify and streamline processes
  - And numerous others (as documented in the Backup section)

Results

- Significant improvements in implementation:
  - The development of Payload Integration Manager Service Standards to improve the services provided to the PDs
  - Baseline the Payload Tactical Plan (manifest) at I-16
  - Human factors verification performed for payload at payload site (trial run with CIR at Glenn)
  - Verification reduction (25%) in CR process
  - The deletion of the required delivery of acoustic, EMI/EMC and Micro-g Control Plans
  - Streamline Training Strategy Team/ Establish Ops TIM
  - Combine PODF and PDRT Teams

- Recent victories:
  - ISS Program Manager approved 20 middecks per flight for Research starting on ULF-2 (1100 W for powered middecks)
  - No waivers required for thermal exceptions of up to nominal 1500 W on ISS (US Lab)

Results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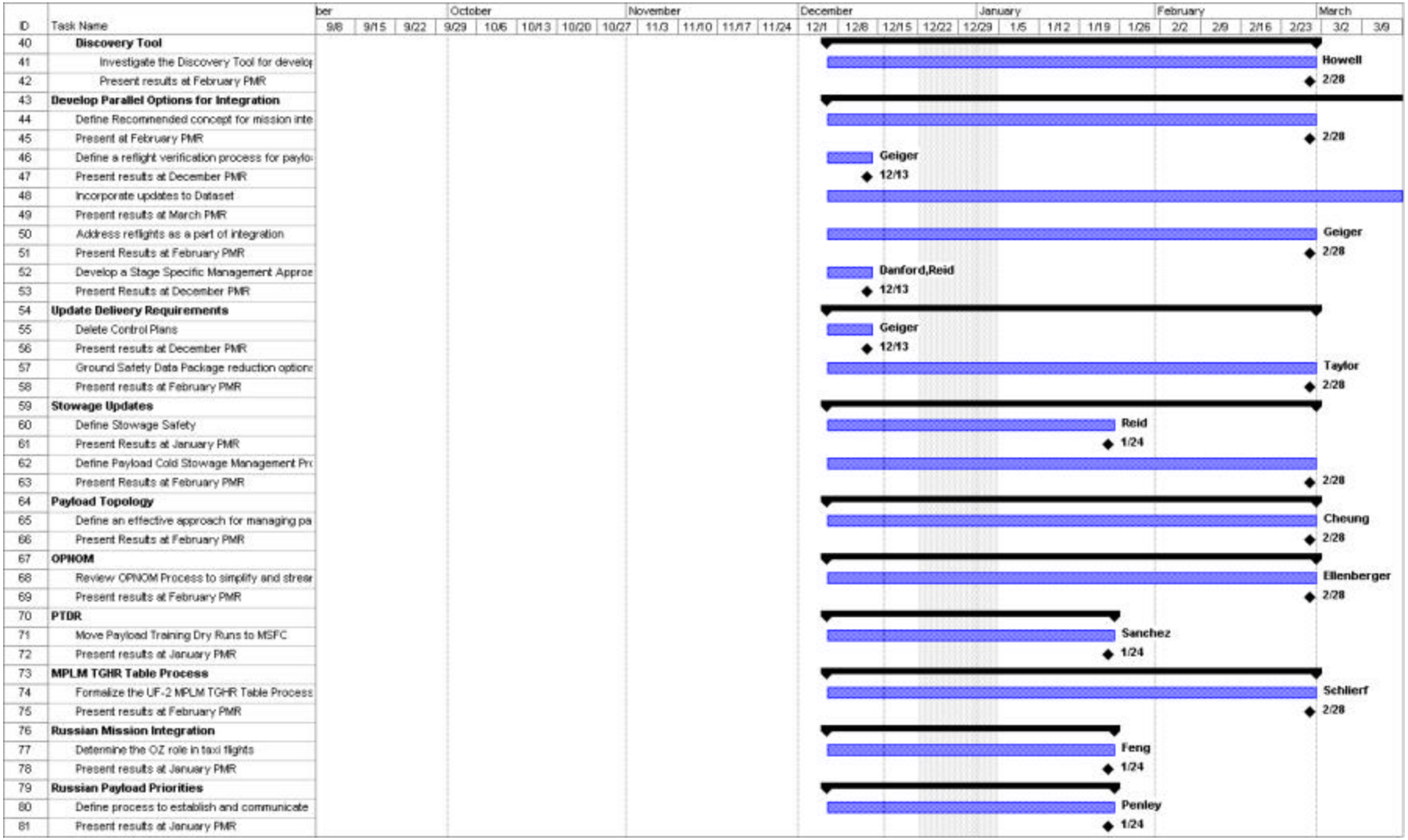
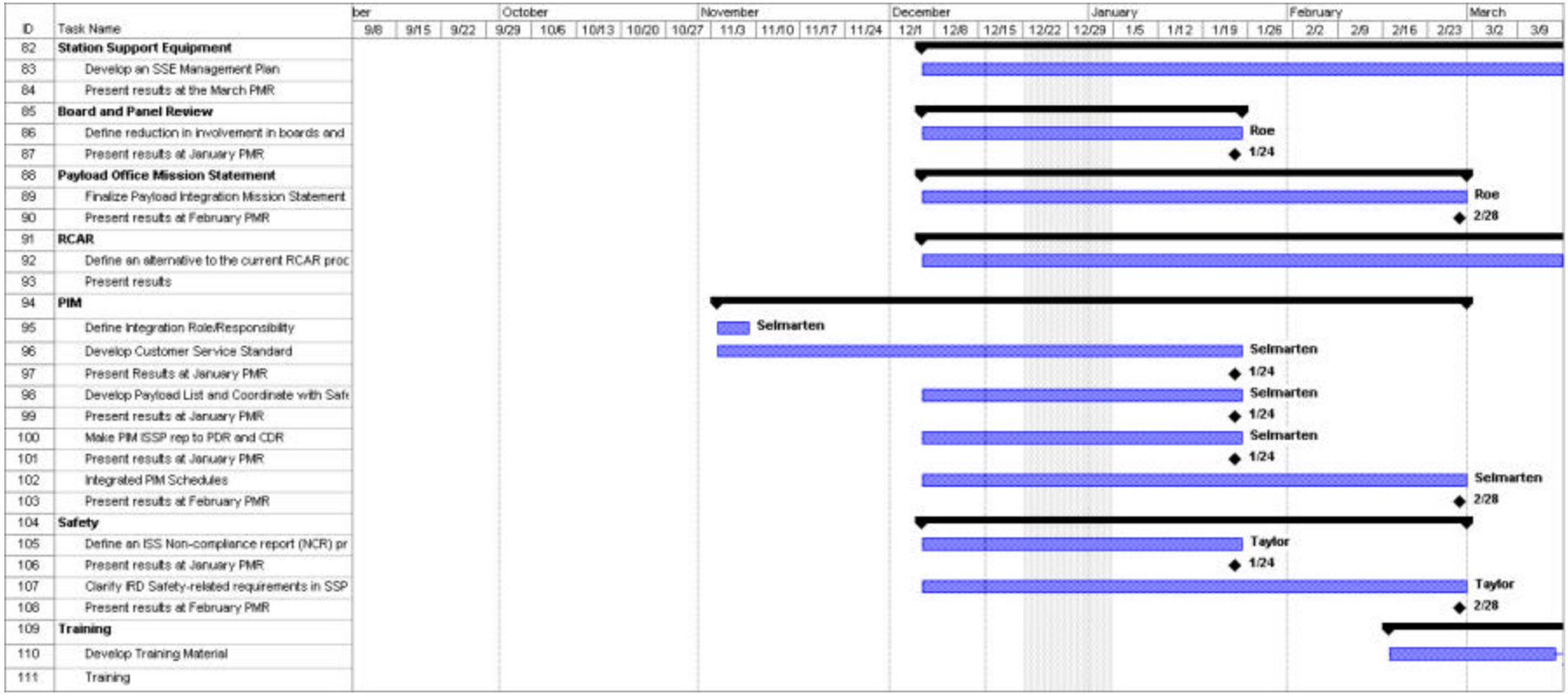
October
November
December
January
February
March
9/8 9/15 9/22 9/29 10/6 10/13 10/20 10/27 11/3 11/10 11/17 11/24 12/1 12/8 12/15 12/22 12/29 1/5 1/12 1/19 1/26 2/2 2/9 2/16 2/23 3/2 3/9
ID
Task Name
1 Define Integrated Process
2 Define Team & Objectives
3 Team Preparation to identify streaming rec's
4 Integrate/Streamline Processes
5 Implementation Plan
6 Document Results
7 Update Web/User's Guide
8 Brief Payload Community
9 Present results at February PMR
10 Level II Completion/Connectivity
11 Define Team & Objectives
12 Distribute Team Instruction
13 Team Preparation to complete SIPOCs
14 Team SIPOCs to Soutullo
15 Integrate SIPOCs/Level II Schedules
16 Implementation Plan
17 Document Results
18 Update Web/User's Guide
19 Brief Payload Community
20 Information Management
21 Cross Functional Payload Data Managem
22 Define Integrated Data Manager Role/Res
23 Assign IDM
24 Define Team & Objectives
25 Update Data Dictionary
26 Team Prep to identify duplication/unecces
27 Implementation Plan
28 Define Data Set Changes
29 Present results at February PMR
30 Tool Update
31 World-Class Payload Developer Web Site
32 Web Portal Concept Def'n
33 Requirements Definition
34 Implementation Plan
35 Develop an architecture
36 Present Architecture at January PMR
37 Single Change Request Form and tools
38 Determine the feasibility of a single chang
39 Present results at January PMR
Roe,Golden,Team Leads
Team Members
Team Members
Team Members
ARES
Griswold
Team Leads
2/28
11/1
Soutullo
Team Members
11/28
Team Members
Team Members
Team Members
Griswold
Team Leads
Copeland
Copeland
Roe,Golden,Team Leads,Data Manager
Data Set Managers
Team Members
Team Members
Team Members
2/28
Copeland
Bailey,Team Leads,Tool Owners
Tool Owners,Bailey
Selmarten
1/24
Bailey
1/24

Results



ID	Task Name	
40	**Discovery Tool**	
41	Investigate the Discovery Tool for develop	Howell
42	Present results at February PMR	2/28
43	**Develop Parallel Options for Integration**	
44	Define Recommended concept for mission inte	
45	Present at February PMR	2/28
46	Define a reflight verification process for paylo	Geiger
47	Present results at December PMR	12/13
48	Incorporate updates to Dataset	
49	Present results at March PMR	
50	Address reflights as a part of integration	Geiger
51	Present Results at February PMR	2/28
52	Develop a Stage Specific Management Approa	Danford,Reid
53	Present Results at December PMR	12/13
54	**Update Delivery Requirements**	
55	Delete Control Plans	Geiger
56	Present results at December PMR	12/13
57	Ground Safety Data Package reduction options	Taylor
58	Present results at February PMR	2/28
59	**Stowage Updates**	
60	Define Stowage Safety	Reid
61	Present Results at January PMR	1/24
62	Define Payload Cold Stowage Management Pr	
63	Present Results at February PMR	2/28
64	**Payload Topology**	
65	Define an effective approach for managing pa	Cheung
66	Present Results at February PMR	2/28
67	**OPNOM**	
68	Review OPNOM Process to simplify and strear	Ellenberger
69	Present results at February PMR	2/28
70	**PTDR**	
71	Move Payload Training Dry Runs to MSFC	Sanchez
72	Present results at January PMR	1/24
73	**MPLM TGHR Table Process**	
74	Formalize the UF-2 MPLM TGHR Table Process	Schlierf
75	Present results at February PMR	2/28
76	**Russian Mission Integration**	
77	Determine the OZ role in taxi flights	Feng
78	Present results at January PMR	1/24
79	**Russian Payload Priorities**	
80	Define process to establish and communicate	Penley
81	Present results at January PMR	1/24

Results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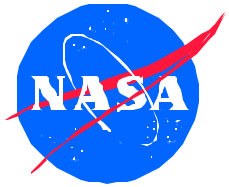
12/1
12/8
12/15
12/22
12/29
1/5
1/12
1/19
1/26
2/2
2/9
2/16
2/23
3/2
3/9
ID
Task Name
82 Station Support Equipment
83 Develop an SSE Management Plan
84 Present results at the March PMR
85 Board and Panel Review
86 Define reduction in involvement in boards and
87 Present results at January PMR
88 Payload Office Mission Statement
89 Finalize Payload Integration Mission Statement
90 Present results at February PMR
91 RCAR
92 Define an alternative to the current RCAR proc
93 Present results
94 PIM
95 Define Integration Role/Responsibility
96 Develop Customer Service Standard
97 Present Results at January PMR
98 Develop Payload List and Coordinate with Safe
99 Present results at January PMR
100 Make PIM ISSP rep to PDR and CDR
101 Present results at January PMR
102 Integrated PIM Schedules
103 Present results at February PMR
104 Safety
105 Define an ISS Non-compliance report (NCR) pr
106 Present results at January PMR
107 Clarify IRD Safety-related requirements in SSP
108 Present results at February PMR
109 Training
110 Develop Training Material
111 Training
Roe
1/24
Roe
2/28
Selmarten
Selmarten
1/24
Selmarten
1/24
Selmarten
1/24
Selmarten
2/28
Taylor
1/24
Taylor
2/28

Conclusion

- The ISS Payloads Office made a substantial investment and commitment to improve the Payload Integration Process
  - All affected parties (including PDs) were involved
- Significant results were achieved in the meetings and plans for further changes were developed
- Implementation of these plans will occur during the next year


NASA


INTERNATIONAL SPACE STATION
RESEARCH AND TECHNOLOGY

Backup

Action Item List

ISS Payload Integration Process Improvement Team Consolidated Action Item List (sorted by priority)										
Action Item Number	Priority	Reference Number	Title	Description	Primary Actionee	Other Actionees	Planned Closure Date	Actual Closure Date	Status (Open, Closed, On-Hold)	Comments
7	1*	PIM-01	World-Class Payload Developer Web Site	Develop an architecture and ultimately a world-class web site for PD access to Payload Integration processes, requirements, data, etc.	John Selmarten	Tom Griswold and each tool rep and PD rep.	24-Jan-03		Open	Architecture by January PMR, add PD tutorial and examples Perform Study @ No Cost
8	1*	PIM-02	Cross Functional Payload Data Management	Identify PD data duplications, recommend and implement changes	Mike Soutullo	PD Reps, Document data and book owners	28-Feb-03		Open	In addition to February PMR develop interim presentations as needed
15	1*	PEI-01	Develop Parallel Options for Integration	Define recommended "concept" for how OZ will perform overall mission integration. Address level/mechanism at which payload requirements will be "controlled". Include how OZ will provide inputs to other Program organizations in early tactical timeframe a	Wade Geiger	Scott Copeland, Mike Soutullo, Susan Davis, Julie Sanchez, Doug Craig, Mark Bowman, Roland Schlierf, Dan Conner, Mike Danford, John Uri	28-Feb-03		Open	Study requires contract upper. Implementation will likely require additional resources.
15 (19)	1*	PEI-06	Reflight Verification Process	Define a reflight verification process for payloads that considers payloads that remain on-orbit and those that are transported up and down and series hardware.	Wade Geiger	-	13-Dec-02		Open	Was action 19. Combined with 15. Report plan and assignments at December PMR
15 (52)	1*		Streamline Reflight Processes - dataset	Incorporate Updates to Dataset	Jim Scheib	-	28-Mar-03		Open	Was action 52. Combined with 15
15 (53)	1*		Streamline Reflight Processes - Part of Integration	Address Reflight as part of Integrations	Wade Geiger	-	28-Feb-03		Open	Was action 53. Combined with 15.
15 (61)	1*		Stage Specific Management Approach	Develop a Stage Specific Management Approach	Mike Danford/ Brad Reid	-	13-Dec-02		Open	Was action 61. Combined with 15.
27	1*		Delete Control Plans	Delete control plans (acoustic, EMI/EMC, Micro-g)	Wade Geiger	-	13-Dec-02		Open	Report plan and assignments at December PMR
4	1		Define Stowage Safety	Define the safety process for Stowage Hardware	Brad Reid	Welby Redwine	24-Jan-03		Open	Was action 49. Combined with 4
5	1	MM-05	Payload Cold Stowage Management	Determine an approach for effectively managing Payload Cold Stowage	Yeun Cheung	Mace Jennings	28-Feb-03		Open	
6	1	MM-07	Payload Topology Management	Determine an approach for effectively managing Payload Topology	Yeun Cheung	Terese Stevens, Buck Gay, Angie Sable, Kristen Rodda	28-Feb-03		Open	
9	1		Develop PIM Service Standards	Develop PIM training, update Level 1 process flow, develop PIM Roadshow, Develop list of products and services by each key milestone	John Selmarten	-	24-Jan-03		Open	
14	1		Single Change Request form and tools	Determine the feasibility of a single change request form and tools	Carmine Bailey	-	24-Jan-03		Open	
48	1		Ground Safety Data Pack Process Streamlining	Meet with John Dollberg to discuss options for reducing the categories of equipment that must be reviewed by the GSRP	Harold Taylor	Roland Schlierf, John Dollberg	28-Feb-03		Open	
56	1		Labeling (OPNOM, IMS)	Review entire End-to-End labeling, OPNOM, and IMS processes to determine ways to simplify and streamline the requirements and process.	Rich Ellenberger	Mercedes Galloway, Linda Gibson, Mike Horkachuck, Janet Kavandi, Melinda Naderi	28-Feb-03		Open	

Action Item List

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60	1		PDL reporting - Discovery tool	Investigate the use of the Discovery tool for developing PDL reports	Scott Howell	-	28-Feb-03		Open	
64	1		Russian Mission Integration	Determine the OZ role in taxi flights	Ven Feng	-	28-Jan-03		Open	
66	1		Post Payload List and Coordinate with Safety	Develop a Payload List and coordinate it with Safety Review lists	John Selmarten	Harold Taylor	24-Jan-03		Open	
67	1		Finalize Comments on Level I process flow	Finalize comments on the Level I process flow chart and submit changes to Mike	Mike Soutullo	All	28-Feb-03		Open	Part of Job
10	2	PIM-05	PIM as ISSP representative to PDR and CDR	Name PIM as ISSP representative to serve as board member at PDR/CDRs	John Selmarten	-	24-Jan-03		Open	Part of Job
11	2	PIM-06	Integrated PIM Schedules	Combine schedule update frequency/timing among entire PIM team, drive consistency of style/content within PIM schedule among all PIM team members, and integrate PIM and PMIT schedules	John Selmarten	-	28-Feb-03		Open	Part of Job
12	2	SAF-01a	Improved ISS NCR Process	Define an ISS Non-Compliance Report (NCR) process	Harold Taylor	-	24-Jan-03		Open	
13	2	SAF-01b	Clarification of IRD Safety-related requirements	Clarify IRD Safety-related requirements in SSP 57000	Harold Taylor	-	28-Feb-03		Open	Study @ No Cost. Document update may result in cost upper.
17	2	PEI-04	Revised RCAR Process	Develop an alternative to the current RCAR process that addresses hardware on-orbit versus in development.	Wade Geiger	-	3-May-03		Open	Report plan and assignments at December PMR
28	2	POIF-1	PTDR to MSFC	Move Payload Training Dry Runs to appropriate locations with PAYCOMs representing Station Crew at PTDRs and replace Pre-PTDR with checklists	Julie Sanchez	-	24-Jan-03		Open	
44	2	KSC-01	LPM Formalize the MPLM TGHR Table Process	Formalize the UF-2 MPLM TGHR Table Process with OZ and the LPM for all future missions amongst all affected parties and document in official program documentation	Roland Schlierf	Tom Ostrowski, Angela Hart	28-Feb-03		Open	
55	2		Station Support Equipment	Develop a management plan which identifies the processes to define the verification requirements, manifest and on-orbit use, and tracking plan for SSE, LSE, and Crew Flight Equipment.	Wade Geiger	Rich Golick	28-Mar-03		Open	
57	2		Board and Panel Review	Team leads to develop problem statements and potential solutions for reducing OZ involvement in boards and panels. Consolidate story to brief Gerstenmaier to seek relief.	Lesa Roe	Jay Onken, Rod Lofton, Mike Horkachuck, Wade Geiger, Gerald Esquivel, Ned Penley	24-Jan-03		Open	Requires Ad-Hoc Reporting
62	2		Mission Statement	Finalize Payload Integration Mission Statement	Lesa Roe	-	28-Feb-02		Open	
65	2		Russian Payload Priorities	Define process which establishes and communicates Russian payload priorities to entire Integration Team	Ned Penley	Ven Feng, Ben Pawlik, Susan Davis	24-Jan-03		Open	
1	3	MM-01	Expand Payload Increment Engineer Role	Establish the PIE as a management interface with the IPM for the two-way communication of integration status and issue resolution.	Brad Reid	Rod Lofton, Mike Danford, John Uri, Ricky Cissom	24-Jan-03		Closed	Part of Job. Forward work wil be to closely communicate the details of this role to all teams and affected customers.

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ISS Payload Integration Process Improvement Team Consolidated Action Item List (sorted by priority)										
Action Item Number	Priority	Reference Number	Title	Description	Primary Actionee	Other Actionees	Planned Closure Date	Actual Closure Date	Status (Open, Closed, On-Hold)	Comments
2	3	MM-02	Improved IPIC support of PMIT	Develop an IPIC Mission Management forum for input to PMIT, improve management and execution of the Payload Change Process (including CEF), Improve Risk Management support and others	Brad Reid	Rod Lofton, Mike Danford, John Uri, Ricky Cissom	24-Jan-03		Open	Part of Job
3	3	MM-03	Payload Integration Readiness Process	Identify integration process gate criteria and milestones (Reword as follows: Develop a process for establishing and communicating payload readiness at the turnover and/or installation gate as a management tool for assuring open items are worked and for d	Welby Redwine	Bill Corley, Cindy Grayson, Kristen Rodda, KSC, John Temple, Carol Verett	24-Jan-03		Open	
4	3	MM-04	Payload Stowage Management	Determine an approach for effectively managing Payload Stowage	Brad Reid	Melinda Naderi	24-Jan-03		Open	Area of Emphasis
4 (63)	3		Crew Change Metrics - Bench Reviews	Develop Crew Change Metrics to track changes based on crew input at bench reviews	Linda Gibson	-	24-Jan-03		Open	Was action 63. Combined with 4.
16	3	PEI-03	Utilize Payload Allocations for Early Mission Design	Work early tactical activities with the program utilizing allocations. Use a 150% concept to allow IPIC to define optimum payload complement based on desired science and vehicle(s) accomodations.	Wade Geiger	-			**ON HOLD**	Implementation of this recommendation is dependent upon the recommendations resulting from Actiton 15.
18	3	PEI-05	Classify EXPRESS Racks as a Vehicle Interface	Perform verification activities for EXPRESS Racks at the payload level versus the integrated rack level. Eliminate the need for Integrated EXPRESS rack inputs. Determine a means for eliminating iterative Stage specific updates for EXPRESS Rack ICDs, lim	Wade Geiger	-	27-Jun-03		Open	Structural transportation related data will still be required at the integrated rack level. Combine 2 stages in to one (multi-use hardware)
20	3	PEI-07	Implement "Acceptance Test" Philosophy	Define the set of tests/inspections that could be performed by PEI for payloads that would eliminate the need for payloads to perform verification.	Wade Geiger	-			**ON HOLD**	On-hold until March/April 2003
21	3	PEI-08	Consolidated Facility and Rack Product	Consolidate facility and rack stage unique products into a single deliverable.	Wade Geiger	-	13-Dec-02		Open	Report plan and assignments at December PMR
22	3	PEI-09	Requirements Change Dictatorship	Eliminate consensus approval philosophy for requirements changes that must be done. Significantly reduce number of mandatory reviewers.	Wade Geiger	-	13-Dec-02		Open	
23	3	PEI-11	Stage Verification Process Establishment	Define separate verification requirements and process for interface verification and Stage (IPL) verification.	Wade Geiger	-	28-Mar-03		Open	
24	3	PEI-12, POIF-15, POIF-18	Verification Feedback to Ops	Define a mechanism to provide verfication data feedback to the Operations Planning group and verify that Operations Planning data input does not exceed certification levels.	Wade Geiger	Susan Davis	28-Feb-03		Open	Part of Job
25	3	PEI-13	Unilateral implementation of requirements changes	Define a mechanism for early implementation (NASA only) for requirements changes that are held up for IP coordination/issues.	Wade Geiger	-	13-Dec-02		Open	Report plan and assignments at December PMR

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26	3	PEI-14	Stowage Integration for Payload by IPIC	IPIC should perform payload stowage design, at a minimum IPIC should perform the stowage design for ETRs and EXPRESS Racks.	Wade Geiger	Brad Reid and others	13-Dec-02		Open	Report plan at December PMR; includes configuration Data Sets
29	3	POIF-2	CPE for US Payloads	Supply a Crew Procedure Engineer (CPE) for all ISS US Payloads (eliminating the need for POCs)	Jim Kirby	-	24-Jan-03		Open	Feasihility Study: No Cost Implmenetation will likely require a contract uper
30	3	POIF-3	Streamline TST/Establish Ops TIM	Establish an Ops TIM which includes all POI disciplines as a "PD kickoff meeting",. Modify current TST process to include Ops TIM, Utilize generic briefings to introduce PD to POI processes	Lynn Baker	-	28-Mar-03		Open	
31	3	POIF-4	CPO/DMC/ PHANTOM consoles consolidation	Combine CPO/DMC/PHANTOM consoles into two consoles	Jim Kirby	-	24-Jan-03		Open	Status at Jan PMR. Savings expected to produce savings of 4 FTE stating as early as FY04. *Part of Job.*
32	3	POIF-5	Training Dataset Baselining Process	Restructure crew training dataset, restructure reports to generate MOD required Payload Lesson Change Request and redefine PLCR/Dataset baselining process	Julie Sanchez	-	28-Feb-03		Open	Cost impact is due to PDL update needs. *Part of Job.*
33	3	POIF-6	User Requirements Collection Tool Development	Replace iURC with URC, an Oracle database that can export planning activities directly into the Consolidated Planning System software.	Susan Davis	-	24-Jan-03		Open	Status at Jan PMR
34	3	POIF-7	Move Video/Photo Data from PDL Ops Data Set to iURC	Move planning-related Video/Photo Data from PDL to iURC	Susan Davis	-	24-Jan-03		Open	Status at Jan PMR
35	3	POIF-8	Minimize iURC Burden on PD	Make iURC requirements as generic as possible, eliminate data collection of unnecessary parameters that change increment to increment, and continue to offer PARC service to generate iURC inputs for PD.	Susan Davis	-	24-Jan-03		Open	
36	3	POIF-9	OBT Template	Improve On-Board Training Development template and move OBT delivery milestones	Julie Sanchez	-	28-Feb-03		Open	
37	3	POIF-10	Streamline Ground Data Services (GDS) Data Set	Reduce from 2 submittals to 1 and shorten template, submit at I-13 months, baseline at I-10 months, and remove data that is no longer required, not currently being used	Nelda Hiley	-	28-Feb-03		Open	
38	3	POIF-11	Combine PODF & PDRT Teams	Combine the PODF and PDRT teams thereby reducing from two team leads to one.	Jim Kirby	-	24-Jan-03		Open	
39	3	POIF-14	GSP Training Dataset Elimination	Eliminate the Ground Support Personnel (GSP) Dataset in PDL and continue to utilize GSP POC to collect required trainee information	Julie Sanchez	-	28-Feb-03		Open	
40	3	POIF-16	Cycle POIC cadre members through GSP Training Team	Assign POIC Cadre members from operational teams to the GSP training team on temporary tours of duty.	Alan Johnston	-	28-Feb-03		Open	Status at Feb PMR
41	3		PD expectations vs. allocations	Address PD exceptions versus allocations issue	Susan Davis	Ned Penley	14-Jan-03		Open	Due at the Mid-January RPWG Assumes no action for IPC Contractor Team.

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42	3			Incomplete/combined with action 42		-		6-Dec-02	Closed	
43	3		Microgravity Analysis		Ned Penley	SAIC	5-Dec-02	6-Dec-02	Closed	Discussion held during Six Sigma meeting. MIPT to define process as planned forward work.
45	3	KSC-02	Eliminate KSC PDLV Electronic Signature for OMRS/TGHR	Eliminate the OZ electronic signature requirement, the PDLV and the implementation of the manual process (I.e., e-mail, attachments, faxes, etc.) for obtaining and filing all OMRS/TGHR signatures	Roland Schlierf	-	6-Dec-02	6-Dec-02	Closed	Done
46	3	KSC-03	Re-establish PDL TRDS to OMRS CP Download interface	Re-establish the PDL TRDS to OMRS CP download interface that allowed export of Payload Unique TRDS files to KSC in OMRS Word format	Roland Schlierf	-	24-Jan-03		Open	
47	3	KSC-05	Update PDL SRDS	Update SRDS PDL Screens and corresponding PDS BB documentation to simplify and streamline requirements input	Roland Schlierf	Scott Copeland	28-Feb-03		Open	
50	3		Microgravity Good Neighbor Criteria	Define Microgravity good neighbor criteria	Mike Danford	-	28-Feb-03		Open	IPIC Cost Impact cannot be accurately predicted. MIPT to perform majority of this study task
51	3		Microgravity Disturber	Delete Microgravity disturber from PIA addenda	John Selmarten	-	28-Feb-03		Open	
54	3		Streamline Reflight Processes - PIM Questionnaire	Develop questionnaire for PIMs/PDs to determine reflight status	John Selmarten	-	28-Mar-03		Open	
58	3		Baseline Payload Tactical Plan at I-16	Modify the template to reflect the I-16 PTP baselining	Jim Scheib	-	28-Mar-03		Open	Part of Job
59	3		Develop PCB directive for I-16 PTP Baseline	Develop the PCB directive for baselining the Payload Tactical Plan at I-16	Lesa Roe	-	13-Dec-02		Open	
68	3		DELETED						Closed	
69	3		Finalize Process Measures	Determine the measures of success of the Process Improvement Effort	Lesa Roe	-	28-Feb-03		Open	
70	3		Crew Change Metrics - Training	Develop Crew Change Metrics to track changes based on crew input at crew training sessions	Jim Kirby	-	24-Jan-03		Open	Part of Job
71	3		OZ Cross-Training	Develop overall training program to cross-train payload integration personnel	Julie Sanchez	-	28-Feb-03		Open	Status at Feb PMR